

Subject: glowbugs V1 #160

glowbugs

Friday, November 21 1997

Volume 01 : Number 160

Date: Thu, 20 Nov 1997 01:01:09 -0600

From: w5hvv@aeneas.net (Roderick M. Fitz-Randolph)

Subject: Old Tubes - Help!

I have recently accumulated the following tubes:

1 ea. VT-4-C

1 ea. T40

1 ea. 201A

1 ea. VT-25

1 ea. UX-281 (Radiotron)

1 ea. CX-381 (Cunningham)

3 ea. T55

Could someone that has the information please pass along to me the general specifications on these? I would greatly appreciate it!

Are any of these suitable for a Hartley oscillator? Apparently the 811As I have are not!

Rod, N5HV
w5hvv@aeneas.net

Date: Thu, 20 Nov 1997 08:06:22 -0600

From: "Claton Cadmus" <aplitech@spacestar.net>

Subject: 39/44 tube.

What is a 39/44 tube, it's a five pin with a grid(?) cap. Is this tube good for anything like a regen or vintage style ham transmitter and what is one worth? I have access to quite a few.

- ----

73 de KA0GKC Claton Cadmus

E-mail cla@spacestar.net

If you live in Minnesota check out this webpage!

<http://www.qsl.net/mnqrp>

Date: Thu, 20 Nov 1997 10:16:29 -0500

From: "Ornitz, Barry L" <ornitz@eastman.com>

Subject: Hartley Oscillator Starting Conditions

Rod, N5HV (formerly W5HVV), wondered why 811's do not start reliably in Hartley oscillators. The reason is that these tubes are designed for normal operation at zero bias. In a typical Hartley, grid-leak biasing is used. When the oscillator is first keyed, the grid bias is close to zero. As oscillations develop, negative bias is developed by grid rectification. With most tubes, i.e. those requiring negative grid bias during normal operation, the gain of the tube is higher with zero bias. This extra gain insures reliable starting of the Hartley oscillator. As oscillations develop, grid bias is produced and the gain of the tube decreases to some steady value appropriate to sustain oscillations. With the 811, the tube does not have enough gain at start-up with zero volts on the grid. However, once started an 811 oscillator should work fine.

One possible fix is to apply some positive bias to the 811 grid through a high-value resistor, keeping the regular grid-leak resistor in place too. This will act as a voltage divider and increase the grid bias slightly. Once oscillations have started, normal grid rectification should overcome this positive bias and drive the grid negative.

I suspect other zero-bias tubes such as the 3-400, 3-500, 3-1000, and 8877 would have similar problems.

73, Barry L. Ornitz WA4VZQ ornitz@eastman.com

[Someplace in my old computer files, I have a SPICE simulation of the start-up behavior of a JFET Hartley oscillator for 30 MHz. With my particular circuit, it took about 30 to 50 cycles of the 30 MHz signal for the amplitude to stabilize. This time is mainly dependant on the RC time constant of the grid-leak resistor and capacitor. Oscilloscope patterns taken with a Tek digital storage scope showed almost exactly the same waveforms that the simulation predicted. It is too bad that virtually all of the SPICE models I have seen of vacuum tubes are so simplistic as to be almost worthless for any simulations other than very crude ones.]

>Are any of these suitable for a Hartley oscillator? Apparently the
>811As I have are not!

>

>Rod, N5HV

>w5hvv@aeneas.net

>

>

Date: Thu, 20 Nov 1997 09:04:30 -0800

From: Jim Haynes <haynes@cats.ucsc.edu>

Subject: Zero Bias (was Re: Hartley Oscillator Starting Conditions)

Something I guess I never understood, even tho I studied electronics back in the vacuum tube era, is how zero-bias tubes work. That is, how do they get the tubes to practically non-conduct with zero bias?

Also, is there any reason for having zero bias tubes other than to avoid having to provide a bias supply?

Date: Thu, 20 Nov 1997 14:06:40 -0500 (EST)
From: EWoodman@aol.com
Subject: Re: Hartley Oscillator Starting Conditions

In a message dated 97-11-20 13:30:43 EST, you write:

> With the 811, the tube does not have enough gain at start-up with zero
> volts on the grid. However, once started an 811 oscillator should work
> fine.

Well, that sort of explains part of what I experienced. In a simple shunt-fed Hartley it would not reliably start up on key-down. The odd thing is when I put my hand over the top of the rig it would kick in. After removing my hand it would continue oscillating for as long as I held the key down. Does that somehow make sense?

Eric KALYRV

Date: Thu, 20 Nov 1997 14:35:15 -0500
From: bgriff@develcon.com (Bill Griffith)
Subject: Re: Regens - Plate plucking vs. series capacitors

Hello all,

If anyone's interested, I've written a *really simple* BASIC program to help select series- and parallel-capacitor values to "pad" a variable condenser to the proper values for a desired frequency range, as an alternative to plate-plucking. Essentially, it prints a short table of the resulting resonant frequency of the circuit at tuning intervals, and allows you to adjust the padding caps to get (approximately) the desired frequency range and linearity (ie within minimal tweaking range).

It runs fine under GWBasic on a PC, should work under QBasic without changes, and shouldn't be hard to get running on other platforms.

Rather than spam the group, I'd be more than happy to email the program to any who wish it. I can send the program as text or a zipped attachment, let me know which.

73,
Bill VE3WGX

Date: Thu, 20 Nov 1997 14:25:12 -0500
From: "Ornitz, Barry L" <ornitz@eastman.com>
Subject: RE: Hartley Oscillator Starting Conditions

Yes, the added capacitance from your hand changed the feedback conditions enough for oscillations to begin. Once started, the feedback was adequate to sustain oscillation. Remember an oscillator is nothing more than an amplifier with feedback. If the feedback is the correct phase and amplitude, any random disturbance in the system will be amplified over and over until oscillations occur. Once oscillations begin, their amplitude will increase until some nonlinearity in the system becomes large enough to limit the gain. In a Hartley oscillator, the feedback is through the mutual inductance of the coil(s). In a Colpitts oscillator, the feedback is through a capacitance network. With a tube oscillator with grid-leak bias, the oscillations increase until the developed bias voltage reduces the gain of the tube to just that needed to keep the oscillations constant.

73, Barry L. Ornitz WA4VZQ ornitz@tricon.net

>Well, that sort of explains part of what I experienced. In a simple shunt-fed
>Hartley it would not reliably start up on key-down. The odd thing is when I
>put my hand over the top of the rig it would kick in. After removing my hand
>it would continue oscillating for as long as I held the key down. Does that
>somehow make sense?
>
>Eric K1YRV

Date: Thu, 20 Nov 1997 12:22:41 -0800 (PST)
From: Ken Gordon <keng@uidaho.edu>
Subject: HR article needed...

I need a GOOD copy of the "ham notebook" article starting on page 74 of the August 1981 issue of Ham Radio Mag.

It discusses an interesting use for small AC motors: making them act as AC generators. These undoubtedly put out MUCH better AC than the semi-square wave junk we get out of most modern small generators.

I also saw an ad in a recent catalog listing 2 HP 110 VAC single-phase motors for about \$30. 2 HP translates to nearly 1500 watts. Single-phase AC motors larger than 3/4 HP are somewhat difficult to find.

Reimbursement and associated costs for the article copy cheerfully offered.

Ken W7EKB

Date: Thu, 20 Nov 1997 17:42:07 -0500
From: "Ornitz, Barry L" <ornitz@eastman.com>
Subject: RE: Zero Bias

These tubes are designed as high-mu triodes where the cathode space charge limits the current flow. Eliminating the bias supply is very

handy. Many tubes operated with grid-leak bias draw excessive current upon loss of excitation. Zero bias tubes do not have this problem. They are especially handy for cathode driven applications since the grid may be grounded. With non-zero bias tubes, cathode drive service requires the grid to have the proper DC bias voltage even if the grid is capacitively bypassed to ground. Many tetrode tubes can be made into zero-bias triodes by connecting the grid to the cathode and using the screen grid as the control grid. In SOME beam power tubes, particularly the 813, 4-125, 4-250, 4-400 and 4-1000, the grid and screen may both be grounded for cathode driven service. Other tubes like the 4-65 and the 4X150/4CX250 family, require the proper negative bias on the control grid when used in cathode-driven service.

73, Barry L. Ornitz WA4VZQ ornitz@tricon.net

Jim Haynes wrote:

>Something I guess I never understood, even tho I studied electronics
>back in the vacuum tube era, is how zero-bias tubes work. That is,
>how do they get the tubes to practically non-conduct with zero bias?
>Also, is there any reason for having zero bias tubes other than to avoid
>having to provide a bias supply?

Date: Thu, 20 Nov 1997 22:40:55 -0600

From: w5hvv@aeneas.net (Roderick M. Fitz-Randolph)

Subject: 812A vs. 811A for Hartley

Still looking for a tube I can put about 700 volts on plate and turn into a reasonable Hartley with some "Ommmmph" in the output... 10-20 watts, at least.

I understand the shortcoming of the 811A for this purpose: what about the 812A? It requires negative bias on the grid in class B. Does that indicate that it might be more suited for a Hartley oscillator than the 811 or is it still in the same boat?

I'm looking for a really good tube that will allow 10-25 watts output and would prefer one with a 6.3 volt filament.

Thanks,

Rod, N5HV

Date: Fri, 21 Nov 1997 04:25:36 +0000

From: Sandy W5TVW <ebjr@worldnet.att.net>

Subject: Re: 812A vs. 811A for Hartley

At 04:40 AM 11/21/97 +0000, you wrote:

>Still looking for a tube I can put about 700 volts on plate and turn
>into a reasonable Hartley with some "Ommmmph" in the output... 10-20
>watts, at least.

>
>I understand the shortcoming of the 811A for this purpose: what about
>the 812A? It requires negative bias on the grid in class B. Does that
>indicate that it might be more suited for a Hartley oscillator than the
>811 or is it still in the same boat?
>
>I'm looking for a really good tube that will allow 10-25 watts output
>and would prefer one with a 6.3 volt filament.
>
>Thanks,
>
>Rod, N5HV
>
>

Why not try an 809? I may do that next cahnce I get in my
Hartley with 400 v. on it. I have tried a 6A3 and it seems to work OK.
(It normally uses a '10 or 801)

73,
E. V. Sandy Blaize, W5TVW
"Boat Anchors collected, restored, repaired, traded and used!"
417 Ridgewood Drive
Metairie, LA., 70001

860 Hartley 'ECO' under construction**
*** Looking for a TRC-10 transceiver *****
*** looking for an RAL receiver *****

Date: Thu, 20 Nov 1997 22:26:21 -0700
From: Dexter Francis <cwest@xmission.com>
Subject: Re: 812A vs. 811A for Hartley

Here's a brief list of max plate voltages for 800 series tubes:

Type	Plate
800	1250
801	600
802	600
803	2000
804	1500
805	1500
806	3000
807	750
808	1500
809	1000
810	2750
811	1250
812	1500
813	2250
814	1500
815	500

Bias settings will vary. Your actual milage will probably be different
;-)

- --df

- -----
Visit our Web site at <http://www.xmission.com/~cwest/>
e-mail to: tubes@usa.net -or- cwest@xmission.com
(P.O. Box 22443, Salt Lake City, Utah 84122)

Date: Thu, 20 Nov 1997 23:13:20 -0800 (PST)

From: Ken Gordon <keng@uidaho.edu>

Subject: Re: 812A vs. 811A for Hartley

> Still looking for a tube I can put about 700 volts on plate and turn
> into a reasonable Hartley with some "Ommmmph" in the output... 10-20
> watts, at least.

Practically ANY of the larger triodes will work fine with 700 volts on the
plate.

>

> I understand the shortcoming of the 811A for this purpose: what about
> the 812A?

812A will work fine for this service. Actually, so will the 811A with a
bit of tweaking. Barry Ornitz suggested another resistor connecting the
grid to the positive side of the powersupply (This in ADDITION to the
normal grid bias resistor). I might also suggest a small capacitor
connecting the grid directly to the plate for an increase in feedback.

I have NOT tried this, mind you, it is just a thought, and might result in
TOO MUCH feedback once it starts oscillating.

But with the 812A you won't need to do this fooling around.

> It requires negative bias on the grid in class B. Does that
> indicate that it might be more suited for a Hartley oscillator

Yes.

> than the

> 811 or is it still in the same boat?

Nope.

>

> I'm looking for a really good tube that will allow 10-25 watts output
> and would prefer one with a 6.3 volt filament.

>

Do the 812A IF you already have one or can get one very cheaply. They are
a LOT more expensive than an 811A (especially the Russian ones).

Ken W7EKB

End of glowbugs V1 #160
